What the invention claimed is:

1. A near-field optical flying head for near-field recording on a disk, comprising:

a carrier maintained in a near-field distance from the surface of the disk to be recorded;

a solid immersion lens of semispherical shape installed in one side of said carrier facing the disk to be recorded, said solid immersion lens having refraction face facing the disk to be recorded; and

a focusing lens installed in said carrier and spaced from said solid immersion lens at an inner side, adapted to focus a laser beam onto said solid immersion lens, enabling a part of electromagnetic wave to pass through said refraction face and to make a near-field exposure to the disk to be recorded;

wherein said solid immersion lens comprises a light scattering layer plated on said refraction face, which causes a chemical reaction to release silver atoms and to enhance electromagnetic wave passing through said refraction face in providing a small optical aperture for the passing of electromagnetic wave when received light energy or heat energy and is reduced to original compound after disappearance of the light energy or heat energy, and a dielectric layer plated on said light scattering layer and adapted to prohibit escaping of gas which

is generated during chemical reaction of said light scattering layer.

2. The near-field optical flying head as claimed in claim 1 wherein said light scattering layer is made of AgOx (silver oxide) that releases silver atoms when received heat energy.

3. The near-field optical flying head as claimed in claim 1 wherein said light scattering layer is made of one of a series of AgX (silver halide) compounds including AgF (silver fluoride), AgCl (silver chloride), AgBr (silver bromide), AgI (silver iodide), and AgAt (silver astatide).

4. The near-field optical flying head as claimed in claim 1 wherein said light scattering layer covers the whole area of said refraction face of said solid immersion lens.

5. The near-field optical flying head as claimed in claim 1 wherein said light scattering layer covers the center area of said refraction face of said solid immersion lens.

6. The near-field optical flying head as claimed in claim 1 wherein said dielectric layer is made of one of the materials of silicon nitride (Si_3N_4) and zinc sulfide-silicon dioxide ($ZnS\text{-}SiO_2$).

7. A near-field optical flying head for near-field recording on a disk, comprising:

a carrier maintained in a near-field distance from the surface of the disk to be recorded;

a solid immersion lens of semispherical shape installed in

one side of said carrier facing the disk to be recorded, said solid immersion lens having refraction face facing the disk to be recorded; and

a focusing lens installed in said carrier and spaced from said solid immersion lens at an inner side, adapted to focus a laser beam onto said solid immersion lens, enabling a part of electromagnetic wave to pass through said refraction face and to make a near-field exposure to the disk to be recorded;

wherein said solid immersion lens comprises a mask layer plated on said refraction face, which is caused to change the refraction index by heat energy upon transmission of laser beam through said solid immersion lens, providing an optical aperture for the passing of electromagnetic wave, and a dielectric layer plated on said mask layer.

8. The near-field optical flying head as claimed in claim 7 wherein said mask layer is made of one of the materials of In (indium), Te (technetium), and Sb (antimony).

9. The near-field optical flying head as claimed in claim 7 wherein said mask layer covers the whole area of said refraction face of said solid immersion lens.

10. The near-field optical flying head as claimed in claim 7 wherein said mask layer covers the center area of said refraction face of said solid immersion lens.

11. The near-field optical flying head as claimed in claim 7 wherein said dielectric layer is made of one of the materials of silicon nitride (Si_3N_4) and zinc sulfide-silicon dioxide (ZnS-SiO_2).